Hybridization Detection via *Intensity* Measurement:

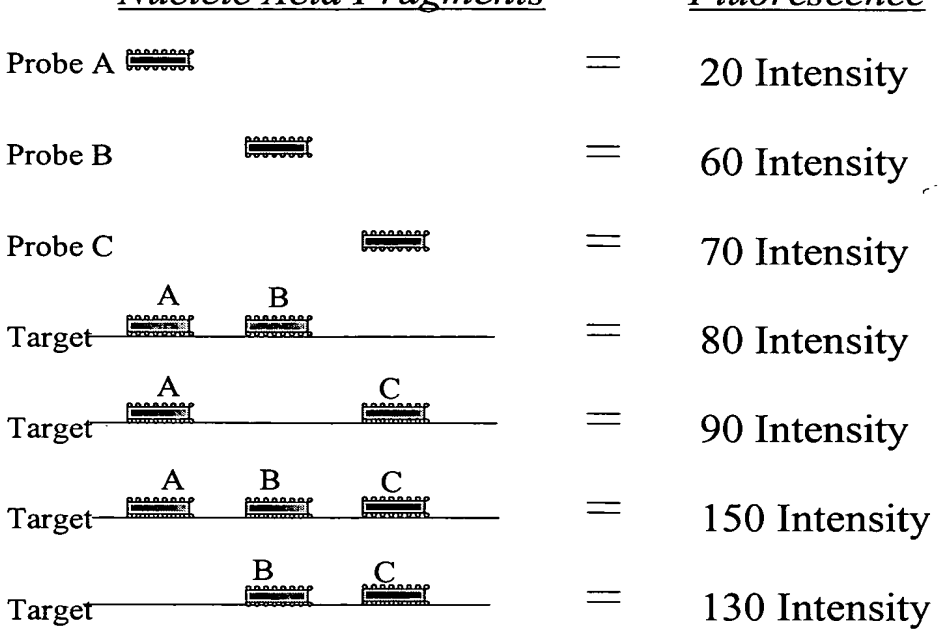

Figure 1.

Figure 4. Analysis of hybridized unitized probe and target.

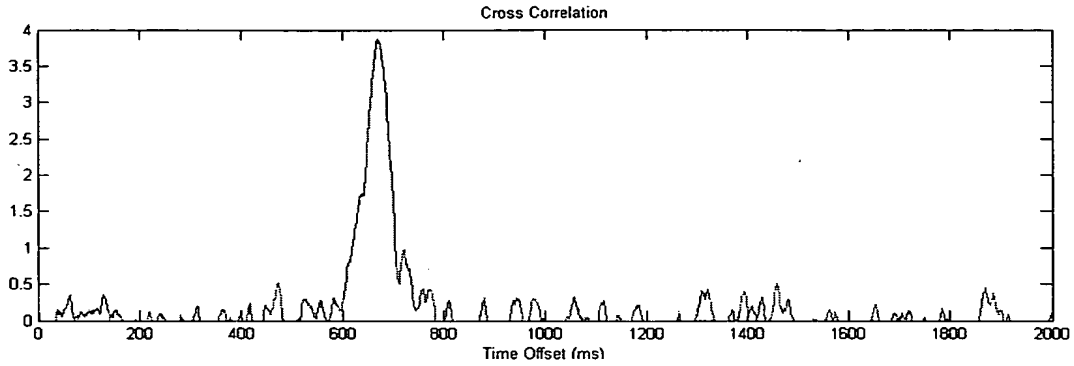

Figure 4a: Labeled PCR product

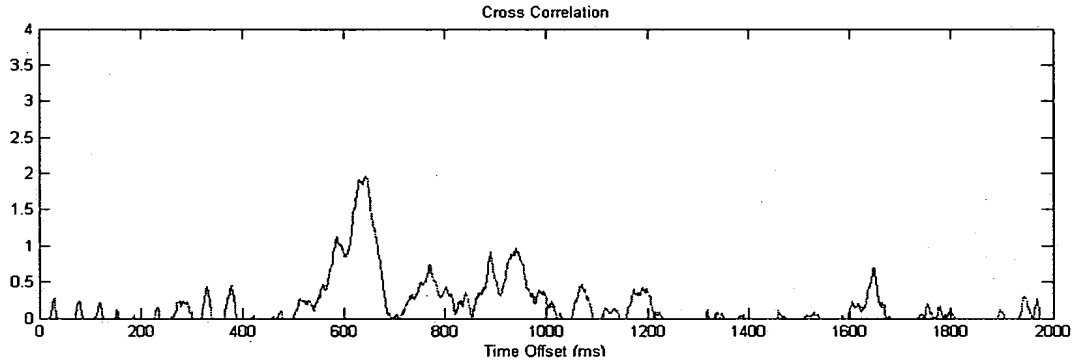

Figure 4b: Labeled PCR product hybridized with 100 fold excess unlabeled PCR product.

Figure 5. Individual molecule analysis – time course of photon burst intensities

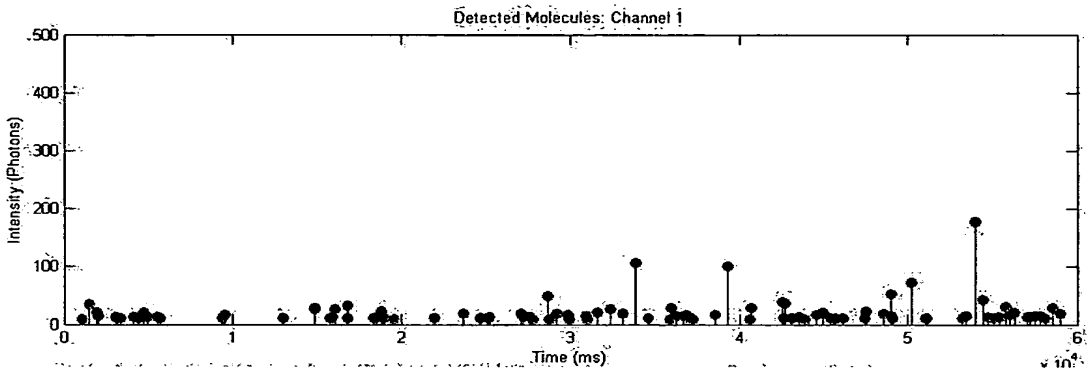

Figure 5a. labeled-unlabeled hybrid molecules

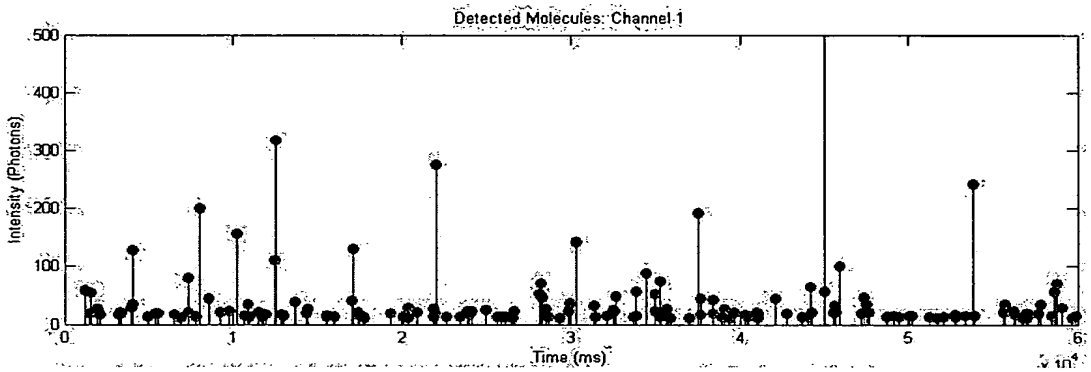

Figure 5b. labeled-only molecules

Figure 6. Histogram of photon intensities of hybridized unitized probe

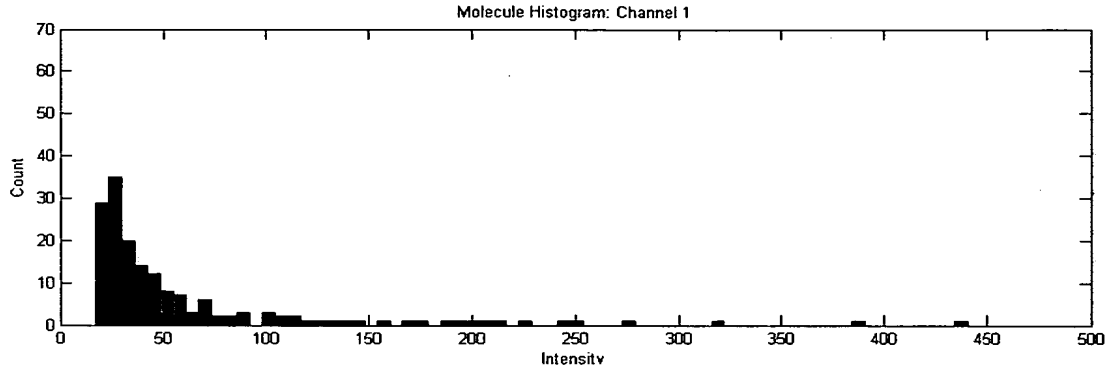

Figure 6a: Labeled PCR product only. 35% of the detected molecules had intensities of greater than 50 photons.

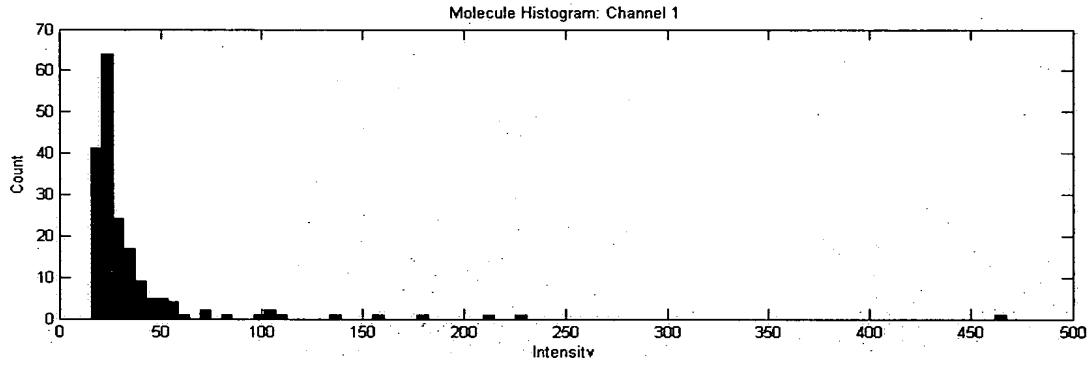

Figure 6b.: Labeled PCR product plus 100 fold excess unlabeled product. 10% of the detected molecules had intensities greater than 50 photons.

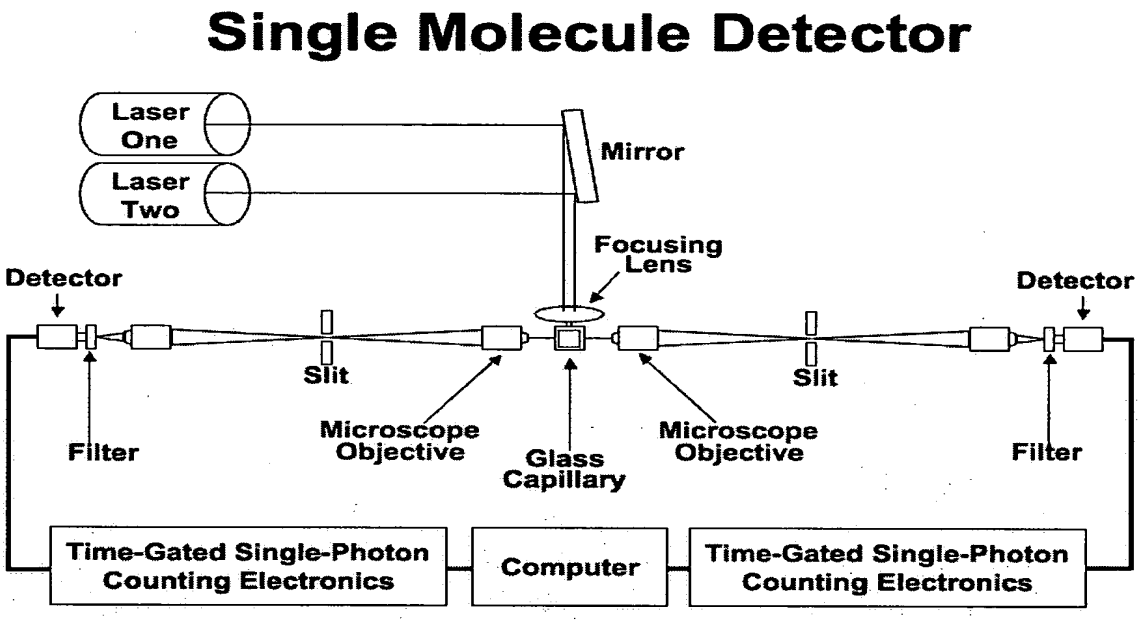

Figure 1 Schematic diagram of the basic apparatus for single molecule detection using laser induced fluorescence.

Heart of the SMD Instrument

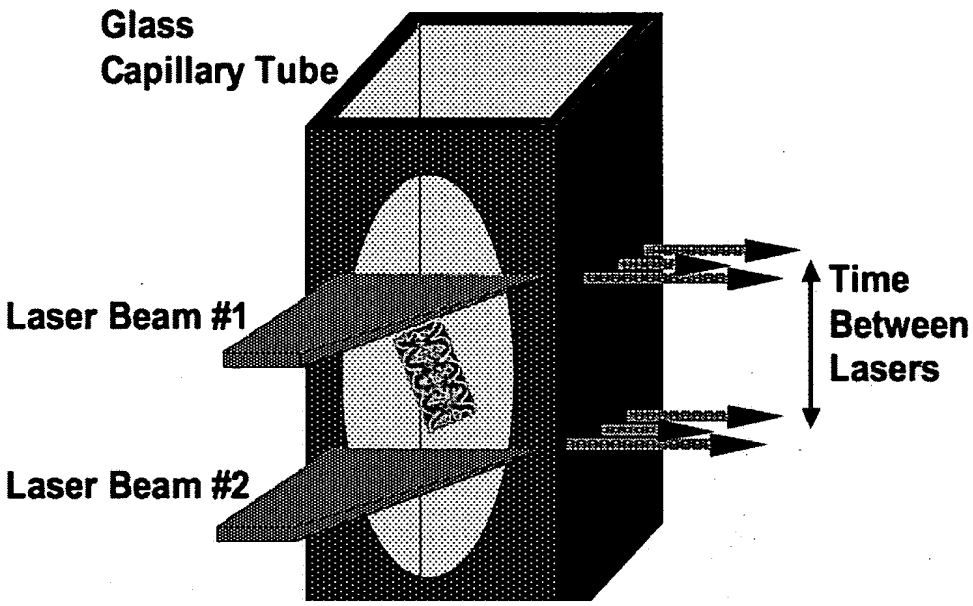

Figure 2. Glass capillary tube forms the heart of the system.

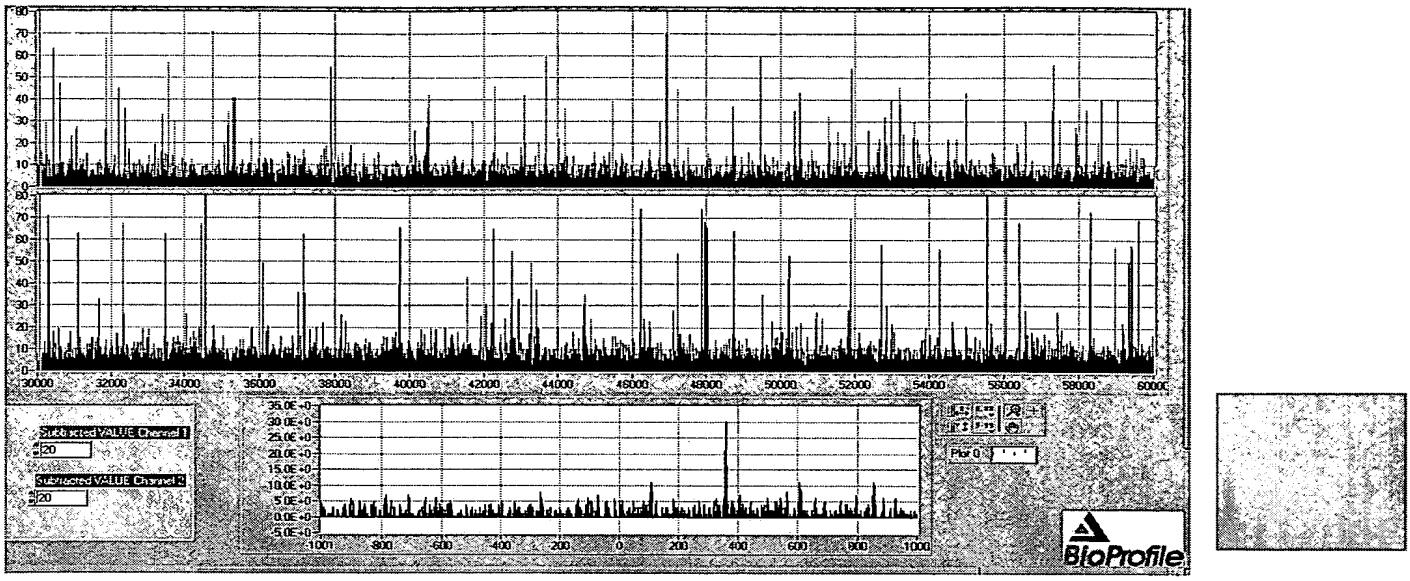

Figure 3. Example of output from existing laboratory device. The upper two traces show the number of photons as a function of time (each unit represents 2 ms) for the two channels. Each large spike representsa fluorescence detection event over the background levels. The bottom trace represents the cross-correlation of the events for channel one with the events for channel two over a 30 sec period with a single peak at 700 msec